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The Computer Tutors Role in Community Health and Learning

Michael Nycyk
School of Social and Behavioural Sciences, The University of Queensland

Margaret Redsell
Skylarkers Healthy Ageing Program, Inala

Introduction to research

This paper discusses a computer tuition program at Skylarkers 60 and Better Healthy Ageing Program in Inala Brisbane. Specifically, it discusses issues of community health, education and technological equity in equipping older students with computer skills. We present the results of a three year study that suggests the role of the computer tutor in the health of the student has accounted for improved student reports of their overall health. From this, measures and suggestions for successful practice to assist students to use technology comfortably in society have been developed and are reported.

The structure of the paper is to report the project's history, including the strategic partnership between the centre and the university, which developed over time. It then discusses the Skylarkers centre where tutoring takes place. This is followed by a brief account of the research questions and methods the study used. The discussion of how our research responded to the technology learning needs of the community is set out. We then report student examples which show how we measure and evaluate the overall success of the program and why we have developed a theory to account for this. Our main claim is that through the tuition students overall emotional and physical well-being improves primarily because of the teaching practices of the tutoring staff. This claim also accounts for an overall high retention rate when other community centres may struggle to attract people to their computer lessons.

The university and Skylarkers strategic research partnership

In 2001 the School of Social and Behavioural Sciences at the University of Queensland Ipswich became involved with Skylarkers 60 and Better Healthy Ageing Program. A lecturer at the school sent students to the centre to study various topics of interest and offer research and feedback on programs to centre management. During 2002 a researcher from the school was assigned to observe the computer tuition program. The researcher and centre manager formed an interest in measuring outcomes of success and learning lessons to improve the lessons. But what was striking was an observed phenomenon that emerged over time. Students attending computer lessons saying they were experiencing better health. It was decided to investigate this using a longitudinal Grounded Theory approach.

Sustaining the partnership is part of a long-term strategic plan the school has to keep research relevant to community needs. It provides free research services to the centre in return for access and informants. In the long-term research funding will be obtained as the centre pursues other research issues relevant to ageing and community issues.

The Skylarkers 60 and better healthy ageing research site

The centre is located in Inala, Brisbane, an area with an ageing population. It aims to encourage healthy ageing through activities and developing informal and formal community networks. The World Health Organisation (1946) defines health as 'a state of complete physical, mental and social well-being, rather than merely the absence of disease'. The centre uses this definition as a basis for developing activities. Since 1996 the centre has recognised the need for technology training as the internet and other computer software use grew. To date over 8000 lessons have taken place. With some funding from local government and donations of time and finance, the program has remained viable whilst other community computer tuition programs have folded. The centre seeks to achieve being a support network for the participants by using the principles of community development, social justice and primary health (Skylarkers, 2006).

There are up to five voluntary tutors of mixed ages, though most are younger tutors. This is because the centre supports work transitions programs. Three computers have a variety of software programs that can be taught. Lessons are one to one; though in the past there have been group lessons and two computer hardware discussion groups. The most requested software training has been in Microsoft Word, scanning and fixing photographs, finding internet information and using client and web based email. Virus prevention, and advice on what hardware to use to burn material to CD, are other topics frequently discussed.

Tutors approach teaching the students in two ways. They can teach a structured program which covers basic computer hardware, Word, internet search engines and email use. However, the tutors have tended to teach material that responds to students' specific computer problems. In particular, tutors have developed long-term relationships with students resulting in the students acquiring advanced computer skills. For example, three students wanted to build complex family tree CD ROM whilst two developed web sites one of which is now online, telling a story about Inala (Cluterbuck, 2006). As a support mechanism, one tutor has designed a CD ROM of lesson material which is updated twice a year.

The students are a mix of genders and mostly are over sixty years of age. On some occasions the centre has catered for those from Asian and South American countries. Tutors were fluent in these languages; therefore, they could support the needs of these people in teaching computer topics. The centre has been aware of the needs of older men. It was through the computer lessons that a men's support group was formed. The tutors told the male students about its existence and the group meets regularly to discuss computer and other issues.

Supporting students in technology literacy acquisition

The research in older students using computers in Australia is growing with a core number of research themes emerging. Technology has a greater potential now to enhance the well-being of older persons and promote social interaction and support (Cutler, 2006). Having the inability to use many forms of technology effectively is considered stressful for older persons (Queensland Health, 2004). Skylarkers recognised in 1996 that a generational division existed due to fast changing technologies, such as email. Research has suggested it is imperative that older persons become proficient users of information and communication technologies (ICT's) (Selwyn, et al, 2003). This age group is also currently less perceived as being unable to be taught these skills, an attitude that previously caused this group to be labelled 'technophobes' (Gietzelt, 2001). Also widely researched is the support computer, internet use and training can give to improving older peoples' health. Skylarkers particularly recognised the social isolation older males can experience. Karavidas et al (2005) suggest the internet can possibly be an avenue to increase the social contacts, both online and off, of this group. We also support Swindell's (2000) view that isolated older persons are definitely not averse to learning new technologies.

But educating older persons in computer use has been problematic for educational and government institutions. Older adults use ICT's for advice, socialising, support, health information and generally keeping up with society's issues (Coulson, 2000). Yet accessing affordable and suitable training has been difficult. There is a problem with time and teaching demands on educational institutions such as TAFE. Older persons often cannot participate in debates on educational policy-making (Hearn, Mandeville & Anthony, 1998), lacking influence on training institutions to design training to cater to their specific needs. Classes are seen to be geared towards younger learners and those with assumed knowledge, meaning older persons are disadvantaged (Gietzelt, 2001). One Australian study suggested older people are less likely to have readily available helpers at times and often need a mentor (Cameron, Marquis & Webster, 2001). Rose (2003) reports another major problem is how software programs user manuals and online help do not assist users to master computer problems. But Johnson (2003) suggests lessening a generational division between older persons and young is overcome by both educational programs and training in computer use.

Therefore, the main problem in training older persons is for teachers and tutors to take into account older persons' goals, abilities and experience levels when training them (Mayhorn et al, 2004). Attitudes towards ICT's can be radically altered over time by providing the opportunity to explore, without pressure, how computers can be used (Segrist, 2004). These researchers reflect the practical actions Skylarkers has done to facilitate technology skill acquisition and access. However, our last assertion which leads to our study is the unintended effects on mental and physical health the program has had. Rather than decrease social involvement with others as Kraut et al (1998) have argued, increased feelings of social support and health, including reducing stress and depression have occurred (Saunders, 2004). We suggest that Skylarkers through the tutoring program have achieved this goal of reducing technology related stress. In particular, people want to be connected to others who share their experiences and interests (Ito el al, 2001), which in turn, our study suggests, does encourage better health states to be reported by the students. Skylarkers provided tutoring in email use to overcome these reported problems geographical distance has caused in isolating older persons.

Research methods

In this section we discuss the methods followed to develop specific measures to account for the program's perceived success. Early in the research we attempted a statistical analysis of the program. This failed due to a reluctance of participants to take the time to fill out the survey. We decided to undertake a qualitative study using Strauss and Corbin's (1998) Grounded Theory methods. In this section we discuss the research procedures, though in-depth treatment of the analysis methods is beyond this paper and we refer readers to Strauss and Corbin's text. The research problem was to find out why students were reporting better health states whilst coming to lessons over time. Two research questions were developed:

- How do we understand older students' experiences of undertaking computer tuition and how are these experiences related to self-reports of their well-being?

- What can be gained from such an understanding with respect to improving the quality and content of computer tuition for older students?

We observed lessons at periodic times between 2002 and late 2005. From this we selected 14 people to be interviewed at length using semi-structured interview techniques. Our experience reflected a similar study of older persons' responses to computer training by White and Weatherall (2000), where such interviews elicited views on set points but also allowed expression of their own views. This eliminated as best as possible researcher-chosen categories and improves the validity of results (White & Weatherall, 2000).

Our next step was data analysis using the open, axial and selective coding techniques as suggested by Strauss and Corbin (1998). We also used constant memo writing of ideas and theoretical sampling, where the interview and field note data were compared against each other to notice patterns in the data. This allowed the properties and dimensions of the emerging categories to be formally identified. Further validity checks included going back to informants and asking tutors their views on the emerging concepts. From this constant reading of the data and checking with informants if what we were seeing was accurate, a central category emerged which we called 'well-being'.

Importantly, Strauss and Corbin (1998) suggest literature be used to allow the theory to be developed for practice. This means the literature can support the emerging theory. In our study we wanted to use the literature to increase understanding of the abstract ideas. First, we defined health self-reporting as the individual verbal assessment of a person's own perception of his or her overall physical and mental health state (Wannamethee & Shaper, 1991). Then we wanted to understand formally the term 'well-being' so it could be made into some qualitative measures. We did this by using a formal definition by Davidson et al (2003, p. 529):

> Well-being is a state of successful performance throughout the life course integrating physical, cognitive, and social-emotional functions that results in productive activities deemed significant by one's cultural community, fulfilling social relationships, and the ability to transcend moderate and psychosocial and environmental problems. Well-being also has a subjective dimension in the sense of satisfaction associated with fulfilling one's potential.

What we draw from this definition is that transcending problems deemed significant by the person concerned will be likely to result in the student reporting a state of well-being from coming to lessons. Breaking down elements of this definition, as Table 1 shows, is matched with conclusions from the theory and data to give a set of measures that can be used to evaluate the content of lessons and responses to tutoring practice.

Measuring and evaluating outcomes

The overall theory that emerged out of the data is that the way computer tuition is practised at the centre does have a role in community health. Learners report an improvement in their overall health from attending classes, which are attributed to the tutors' teaching methods and style of instruction. What we observed was the tutors' methods resulted in reporting positive health states. In particular, why we state student well-being was a result of the tutoring practices was how computer and social isolation problems were resolved by the tutors. Table 1 shows how Davidson et al's (2003) definition, matched to the research data, produced a number of qualitative measures suggesting students mostly reported a state of well-being from attending lessons:

Table 1 Evidence in Tuition Practices for the Reported State of 'Well-Being'

CONDITION FROM DAVIDSON ET AL (2003) DEFINITION	EVIDENCE DATA SUGGESTS FOR WELL-BEING
	• Tutors problem solve specific learner problems to a successful conclusion • The learner has been frustrated by a problem or had a gap in knowledge the tutor has been able to understand and respond

State of successful performance – something turns out successfully, namely the tutoring	to • The tutor will take extra steps and experiment with the internet or asking others to find solutions to learner problems if they themselves do not know, often resulting in a successful outcome • Tutors investigate problems and ask the learner specifically what needs to be solved, therefore increasing the chance of a positive and successful outcome
Integrating cognitive and social-emotional functions – there is something practical and useful that takes place between learner and tutor	• The tutor will explain step by step the procedure and repeat the explanation until the learner understands the material • The tutor can 'read' the emotions and body language of the learner in order to gauge if something is not being understood • The tutor will use humour to relax the learner when the material becomes difficult to learn or a problem arises
Productive activities – goals are reached or the outcome is positive or seen as useful by the learner, tutor and centre	• The tutor will seek to draw out of the material the exact things the learner needs to know to solve a computer problem • The tutor will advise the learner on aspects of computer software, hardware and internet issues to make sure they are getting quality information about issues that can cost the learner money • The tutor will use as many resources as needed to solve the learner's problem, both by electronic means and asking others
Deemed Significant – the outcome is considered important in the view of the learner, tutor and centre	• The learner considers it important to learn skills to use the internet and keep in contact with family, friends and others • The tutors understand the need the learner has for social physical and online contact and teach

	skills to make learners literate in this area • The tutors understand the need for learners to know they can ask the tutor any questions at any time
Cultural community – the values, habits and beliefs of the group, learner, tutor and centre	• The centre aims to make learners technology literate • The centre seeks to provide opportunities for social contact with others as an outcome of the lessons if desired by the learner • The centre aims to make computer training affordable to all learners
Fulfilling social relationships – the relationships that take place between learners, tutors and the centre is deemed to be fulfilling, indicated by the types of comments the learners make	• The tutor employs a manner and style of tutoring that makes the relationship fulfilling to the learner by showing patience and understanding the different learning needs of older learners • If the tutor leaves most learners will not leave if another tutor needs to take over • The tutor takes the time to build the relationship over a long time so the learner will come back to the centre as much as possible
Ability to transcend…problems – the key to reporting good health states – the lessons have transcended beyond where the learner was before they came to the lesson	• The tutors have a problem solving focus and use strategies to solve the problem the learner has • The centre keeps the lessons at an affordable rate to make sure the learner can continue to learn computer lessons • The centre has provided opportunities to solve problems of computer literacy and problems of isolation and social exclusion older learners may face in current society

We will provide some brief interview and observation data examples to support these measures. In particular, we suggest there are positive economic, social, community as well as health outcomes specifically as a result of tutor's performing certain actions to encourage computer use. If computer tuition is presented as a problem-solving approach at a pace

suitable to the student rather than a structured inflexible approach, positive feelings towards computers are likely to result. In turn, positive responses encourage further exploration of computer technology, in particular, forming social networks and keeping in contact with family and others who are geographically distant. The informants and tutors names have been changed for protection.

Successful Performance

Skylarkers' tutors have an ability to solve most computer problems to a satisfactory conclusion, and take extra steps to solve a student's problem. In one example the student kept finding that data they were typing in Word kept disappearing:

> *…it kept deleting. So the next I asked Gordon, you know, how to do it and we did it and that was fine. He's really been so helpful. Whereas at the course one wouldn't be able to do that.*

This was one of several examples where the student found the centre's lessons more useful than a formal course because the individual tutoring solved a specific frustrating problem.

Integrating cognitive and social-emotional functions

This measure suggested that the tutor and student used particular emotions and abilities to solve computer problems. For example, the need to repeat instructions consistently and often was highly valued by students:

> *He's very informative and makes it very simple, um, you know, I can understand what he's talking about and if I don't grasp it then he repeats it for me. He's a very good tutor.*

Also the tutors use appropriate humour to relax and reassure the student whilst undertaking procedures:

> *James shows Mary font sizes. They laugh over the change and type of fonts available. Mary changes the font, but James says it's a trick to click on one word to change the font.*

These two examples suggest the tutors use particular cognitive and social-emotional functions to make complex computer procedures understandable, repeating instructions and employing humour to relax students during learning. In particular, it was noticed that tutors did develop a high tolerance for repeating instructions. This was important because many computer procedures, such as complex formatting of Word documents, were reported as confusing and frustrating for students to master. Tutors explaining things in the particular manner they did reassured the student the problems were being solved and the student could learn what was difficult to master.

Productive activities

This measure means the student feels the activity they are performing is useful and productive in solving their computer problems. The majority of students reported some aspect of the lesson was always productive for them. One student particularly emphasised this as he reported how productive it was to finally be able to communicate with his birth country in ways he could not before:

> *I've got a microphone on my system and I talk to people in Germany, mainly Germany which is great if it's only for the fact one hears the different dialects in different parts of the country. And I was put onto that here by George through Paltalk, you know, which gave me an insight of the possibilities and joy of it that it can bring.*

Other students reported that similar computer activities the tutors taught them, in the students' views, were productive for their individual needs and solving their computer problems. It was also productive to them to learn the range of electronic communication skills to gain connections with others in distant locations. The tutoring activities taught were seen as productive to overcome barriers of feeling isolated from others. This is because the tutors knew what procedures in email and chat room use would be useful to the student.

Significant outcome

This measure meant the student reported that, to them, a significant outcome had been reached in understanding a computer operation. All of the interviewees reported they obtained some outcome that solved a significant computer problem. For example, one student had struggled to produce flyers that were crucial to be delivered to clients on time. The tutor persisted in helping until the student become confident in producing them:

> *Yes, the other day I'm, well I'm the volunteer co-ordinator of a nursing home, and, so I have to send out various flyers. And before now I've always got somebody to do it for me at the nursing home and the other day… showed me how to do one. So I went home and I did one and sent it out and that was very pleasing.*

Again the tutor followed a strategy of specifically teaching the complex formatting Word features to reach this goal. Previously, the student reported she could not get any other person or training organisation to do this. Many examples of significant outcomes were reported by students that suggest the tutors knew what to teach to overcome previously troubling computer use issues.

Cultural community

This measure broadly refers to the habits, behaviours and beliefs of students, tutors and centre management have formed towards the computer program in its ability to solve computer issues. What is suggested by the students is that the program has, firstly, allowed computer technology to be used with little stress and provide opportunities to meet others in virtual and physical space. Two examples suggest this is the case:

> *Well it reminds me to learn more about computer uses and selfishly I would have to admit that I want to keep my mind active you know. I want to keep my mind active and I want to be able to make use of what I learnt because my main aim is to correspond with people and receive mail.*

> *So Skylarkers was the perfect outlet where I'd meet people, and they had functions and outings and all the rest of it and, I found that quite interesting and that's why I went there and I did meet, I did actually make quite a few friends by going there and I still have those same friends today. I first went there about five years ago, but I didn't, I didn't get straight into computers because I didn't own a computer and I could see them, the guys there on the computers, I'd ask them questions about what type of computer to get and, what could be the*

> *best type of computer for me to have and they'd say well what are you interested in.*

Therefore, there is a building of community in some way as a consequence of the computer lessons because social and emotional issues, especially feelings of isolation, as well as technology problems, are solved.

Fulfilling social relationships

This measure is very important because the literature suggests isolation of older persons is a real issue in current society. Families, friends and others may even live overseas. But internet chat rooms and email have allowed new social relationships to occur and be maintained. The students reported how tutors spend much time teaching them how to set up email accounts, attach photos and discussing the pitfalls of using on line chat rooms. One student reflected, as others did, how successful being taught to use electronic communication has been for his life:

> *I use that to send emails to my family in different parts of Australia and locally. I send emails to my daughters and sons. They in turn send me emails back with photos of the family, that's the main reason for sending emails to keep in contact with family. I've learnt through Skylarkers how to send emails with attachments so you can send recent photos of your family through, on the net.*

The previous example of the student who could now communicate with his home country also showed how tutors, by teaching specifically how to use such technologies, had fulfilled a social relationship the student could not previously attain.

Ability to transcend problems

Skylarkers primarily measures its success in the computer tuition programs by how computer, but also individual, problems are transcended. Solving problems is suggested to be linked to well-being because a condition causing distress has been overcome. The first example is one related to computer use whilst the second is about overcoming the boredom of retired life:

> *Well it reminds me to learn more about computer uses and selfishly I would have to admit that I want to keep my mind active you know. I want to keep my mind active and I want to be able to make use of what I learnt because my main aim is to correspond with people and receive mail.*
>
> *But I find it's been a big thing for me because as you imagine once you retire life can become a little bit stale and monotonous. Coming here probably most likely changed all that for me.*

What this data suggests is Skylarkers has structured the program to provide the opportunities for the student to find new pathways in life rather than just providing lessons with no further engagement with tutors.

Conclusion of results

What we suggest is that Davidson et al's (2003) definition provided an appropriate explanatory framework for the results and defined the term 'well-being' as a practical measurable concept. The tutors' actions in tutoring in specific ways fulfil each aspect of the definition. A theory emerged from the data which clearly suggested the tutors were responsible for reports of

student health being more positive. Primarily, this was because computer problems were being solved and technology related stress was reduced. We argue that without the definition we could not have developed qualitative concrete measures for future needs assessment. As the literature discussed showed how computer training has many health benefits, we argue these measures demonstrate, by listening to student opinions, emotional and physical health does improve when technology is taught in ways that reduce the stress of its use being experienced by older adults.

Discussion and identifying future needs

Our argument has been that qualitative measurements do reflect the economic, social, cultural and environmental outcomes have been reached by the computer tuition program. By understanding and listening to the stories of the students, their experiences suggest a relationship to their reports of well-being. Whilst these measurements seem abstract, we argue that the examples show the program has achieved the goal of providing healthy ageing choices through reducing the stress of using new technologies.

One particular outcome useful for centre management was the development of a tutor profile. To answer our second research question, improving the quality of computer tuition, we suggest tutors have certain qualities when teaching older students. Patience, empathy and reassurance are crucial in teaching this group. The tutor should be able to read the body language and gestures of the student as some students are reluctant to admit they do not understand something. But three other important qualities the students suggested were positive included; not assuming pre-existing knowledge, not being condescending, that is, not use language which can be interpreted as patronising because of the person's age, and be willing to repeat explanations of computer procedures many times. The students could call the tutor out of hours if something went wrong with the student's computer at home. Also not mentioned previously, but of importance to accessing technology training, was the low cost of the lessons. Lesson costs were 2 dollars for fifty minutes, but tutors would often go over the time if necessary. Recent cost increases were modest and have not resulted in a drop in student numbers.

Finally, we make the point that Skylarkers has been able to respond to a full range of learning needs and identified future needs of students. The tutors possessed skills in a range of software applications, including specialised software such as family tree programs. If the tutor could not teach software the centre would source others to do so or undertake research on the software. This was successful because some students asked to build web sites and CD ROM projects. Skylarkers was able to solve these problems by sourcing volunteers and resources to meet students' needs. Volunteers also kept up with emerging technology and software in case it was asked for by students. Software is kept current as best as possible and if asked for the centre will consider a request to purchase software the students may need to know. This is particularly crucial when Windows is updated, as those students buying new computers in the future will likely have Vista as their operating system.

Skylarkers have responded to the problem of overcoming the stress technology brings to older persons. In doing so it has contributed to the well-being of the student by solving technology and most importantly, personal and societal issues this group faces. The measures suggest overall Skylarkers has been able to achieve longevity in offering computer training because the tuition responds to the range of needs. Every tutor to date has in some way contributed to the health of older persons in the Inala and surrounding community by their actions in being not just tutors, but advisors and facilitators of opportunities to a healthy ageing journey.

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